EGEC – EUROPEAN GEOTHERMAL ENERGY COUNCIL

A Geothermal Europe - EGEC Brussels Declaration

By definition, geothermal energy is the energy stored in form of heat beneath the earth's surface. It has been used since ancient times for heating, and for the last 100 years, also for electricity generation. On a human timescale, geothermal heat is an inexhaustible source of energy, comparable to that of the sun.
Geothermal energy is a sustainable, renewable, nearly infinite energy source, delivering heat and power 24 hours a day throughout the year, and is available all over Europe.
Until now we have only used a small fraction of the underground heat reservoir potential.

Big steps forward have been taken since the Ferrara declaration of 1999, the first public word of EGEC:

- Electric power production on low enthalpy geothermal fields has been activated
- The first electric power has been generated in Soultz-sous-Forêts in an Enhanced Geothermal System (EGS)-plant, after many years of work
- A renewed activity for geothermal district heating and direct use can be identified from France, Germany, and the countries in and around the Pannonian basin, as well as from new areas like Spain, Ireland.
- Geothermal heat pumps are firmly established on the market in Austria, Germany, Sweden and other countries, and uptake is growing in the West, East and North.
- The numbers that we set to ourselves in 1999 for the year 2010 are within reach:

Heat:	15.000 MW_{th}
Electric Power:	2000 MW_{el} and 16.000 GWh/y
(for all of Europe)	

Nevertheless, our rate of activity must not be reduced. Current goals are:

- Implement the geothermal Research Agenda:

In January 2009, EGEC published a geothermal research agenda fixing the research priorities for all geothermal technologies until 2030, in order to decrease costs:

- by 5% for geothermal District heating: reach 40 €/MWh_{th}
- by 10% for geothermal heat pumps: reach 15 €/MWh_{th}
- by 30% for conventional geothermal power (flash and dry steam): reach 20 €/MWh_{el}
- by 50% for low enthalpy electricity production: reach 50 €/MWh_{el}
- by more than 50% for EGS: reach 50 €/MWh_{el}

- Improve geothermal Legislation:

The Directive on the promotion of the use of renewable energy sources sets the framework to achieve the target of a 20% share of renewable energy sources in final energy consumption in EU-27 by 2020. The attainment of this target will require the use of diverse renewable non-fossil energy sources, among which geothermal energy.
The National Renewable Energy Action Plans (RAPs) that each Member State will have to submit in June 2010, will present actions needed to foster the contribution of Geothermal Energy to the targets set in the directive proposal.
EGEC is preparing recommendations for legal framework to regulate geothermal energy effectively either through existing or new legislation, and to remove legal barriers that hamper the development of geothermal energy in Europe.
In order to increase the share of geothermal energy in buildings, Member States should enforce the use of minimum levels of energy from renewable sources in new and refurbished buildings. The Directive on Energy Performance of Buildings must integrate this requirement in its current recast.

- Train and Certify, Educate

In recent years, the amount of geothermal energy installed capacity in the EU has shot up. This take-off will become a tremendous growth in the next years.
It is impossible to manufacture, build, install and maintain geothermal plants without people. It is equally impossible to plan, gain permits for and supervise a geothermal installation without them.
Educating and training people in geothermal energy is crucial to sustainable geothermal development.

- The geothermal targets and how to achieve them:

Targets for all of Europe (EU-27 and the rest)

Geothermal energy	2007	2010	2020	2030
Heating				
installed capacity (MWth)	**14 100**	**20 000**	**50 000**	**80 000**
heat delivered (Mtoe/y)	**3,8**	**5,5**	**13,7**	**22**
Electric power, conservative approach				
installed capacity (MWe)	**960**	**1 300**	**5 000**	**15 000**
power delivered (TWh/y)	**6.9**	**9.8**	**39**	**117**
Electric power, ecologically driven approach				
installed capacity (MWe)	**960**	**1 300**	**10 000**	**30 000**
power delivered (TWh/y)	**6.9**	**9.8**	**78**	**234**

Targets for EU-27

Geothermal energy	2007	2010	2020
Heating			
installed capacity (MWth)	9 800	16 000	39 000
heat delivered (Mtoe/y)	2.6	4.3	10.5
Electricity power			
installed capacity (MWe)	830	1 000	6 000
power delivered (TWh/y)	6.5	8	50

➢ **How to achieve these targets ?**

- The concept of Enhanced Geothermal Systems (including the classical Hot-Dry-Rock-idea) will tremendously increase potential.

- Innovative power plants permitting the production of electricity using low thermal water temperatures of the order of 100 °C, and for micro-generation will also gain importance.

- Installing larger plants using clusters of wells is crucial to reach the geothermal power targets.

- Developing Hybrid systems for heating & cooling but also for electricity (beneficiating from the geothermal base load ability) with biomass, solar, etc. are promising for the future.

- New drilling rigs are needed: the drilling costs for geothermal wells are correlated with the oil sector because not enough drilling rigs and specialized geothermal, drillers on the market.

- Educate and train a qualified labour force: The geothermal industry is currently suffering from a shortage of geothermal scientists and engineers, if the Strategy being proposed here is to be successful, it is very important to place emphasis on providing specific geothermal education at under-graduate and graduate levels as well as training for technical staff.

- Adapt infrastructure: advanced engineering materials and electricity networks for the future are needed.

The costs related to this strategy are estimated to be 1 Bio € / year until 2030.

- 30 Mio €/year for R&D
- 750 Mio €/year for new geothermal power plants
- 200 Mio €/year for new heating &cooling installations
- 20 Mio €/year for flanking measures: education, training, legislation, promotion...

The implementation involves support from a range of sources: International programs, EC programs, other sources of European funding, national research programs, industry funding and third-party private finance.

The Long Term goal (2030) of the geothermal sector can contribute to 5% of total electricity production in Europe, and 3.5 % of total heat generation.

Our task remains to make sure, that every European will learn what the words "Geothermal Energy " mean.

Brussels, Belgium, February 11th, 2009

For the EGEC members on the occasion of the GTRH conference signed by:

Dr Christian Boissavy,
EGEC Founding President

Dr Burkhard Sanner,
EGEC President